



**NORTHEAST REGION
INVENTORY AND MONITORING PROGRAM**

STANDARD OPERATING PROCEDURE

**METADATA TOOLS USED IN THE CREATION OF THE
FGDC BIOLOGICAL DATA PROFILE**

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DRAFT

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FGDC Biological Data Profile (BDP) Metadata
Introduction to Metadata Tools Used to Create FGDC BDP Compliant Metadata

This document was originally published on May 28, 2003. Intergraph's metadata software was updated from SMMS 3.2 to SMMS 5.1. The update is significant and detailed instructions on how to use it have been added to part 9.

At a minimum, at least two metadata records should be created for each biological inventory: one spatial metadata record for each shapefile and one Biological Data Profile metadata record for each MS Access database or MS Excel Workbook. The Biological Data Profile metadata record should not include the entity and attribute information for the shapefile's attribute table.

This procedure was used to create two FGDC Biological Data Profile (BDP) compliant metadata records for two National Park Service (NPS) Inventory Databases. The databases are in Microsoft Access and the associated spatial data are ESRI shapefiles.

This procedure is intended to give an introduction to tools that can be used to assist in the creation of FGDC Biological Data Profile compliant metadata. This procedure is not intended to be an introduction to creating metadata or a complete guidance document for any of the metadata tools. Each of the tools has its own documentation which can be found at the websites listed.

The three major sections of the metadata for which information can be extracted are spatial information, entity and attribute information, and taxonomic information. Since a single metadata tool does not currently exist to extract all of these data, several tools were used.

The procedure has been divided into the following nine parts:

- 1 - Spatial Data Organization Information and Spatial Reference Information
Using ESRI ArcGIS 8.x – ArcCatalog
- 2 - Entity and Attribute Information
Using MS Access – NPS Dataset Catalog (version 2002.1) – Data Dictionary Harvester
- 3 - Merge the Entity and Attribute Information with Spatial Data Organization Information and Spatial Reference Information
Using Notepad
- 4 - Taxonomy Information
Using Online Tool: ITIS - Compare Taxonomy/Nomenclature
- 5 - Convert Text Metadata Record To SGML
Using Intergraph SMMS 3.2
- 6 - Merge SGML Metadata Record and Taxonomy Information
Using Notepad
- 7 - Edit SGML Metadata Record
Using Intergraph SMMS 3.2

8 - Parsing the Final Metadata

Using MP 2.8.2 with the Biological Data Profile (BDP)

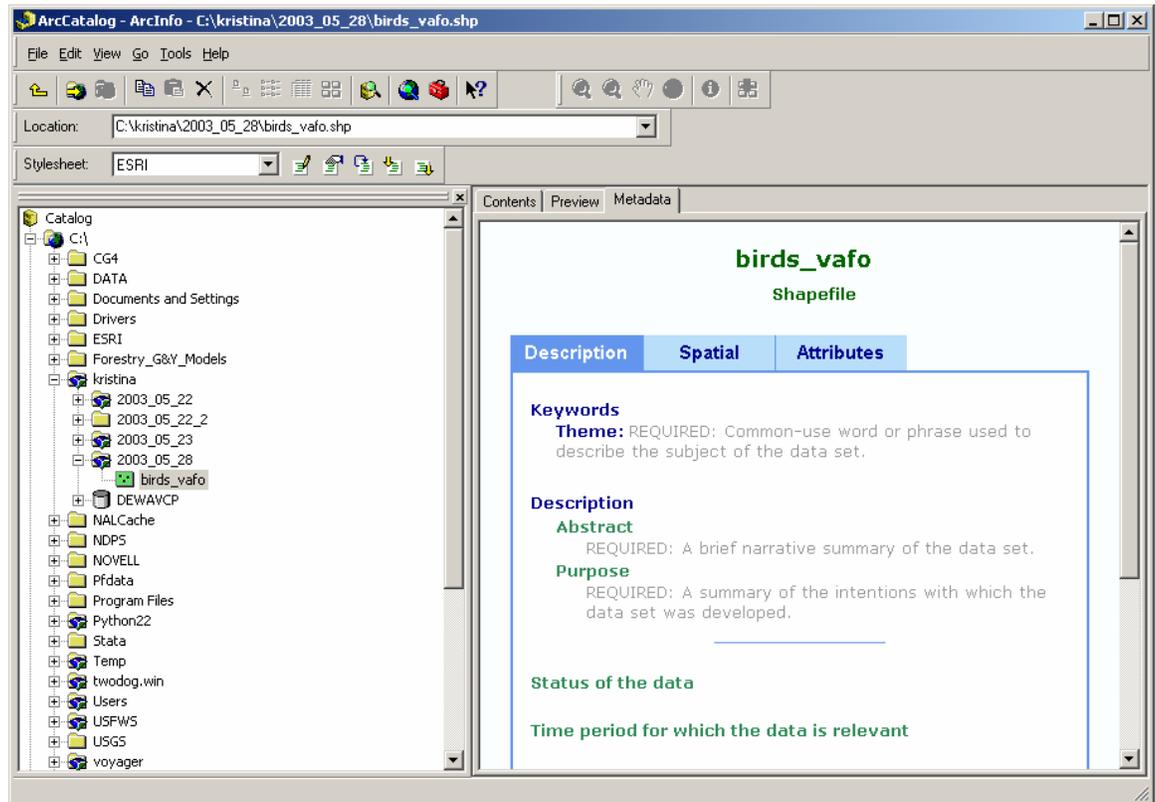
9 - UPDATE: Using mp After Exporting Metadata with Biological Data Profile Elements from SMMS 5.1

1 - Spatial Data Organization Information and Spatial Reference Information

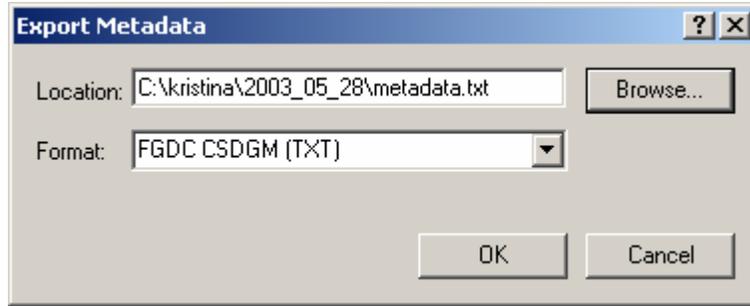
Software: ESRI ArcGIS 8.x – ArcCatalog

Website: www.esri.com

1. Open ArcCatalog
2. Navigate to the spatial data
3. Click the Metadata tab
4. Click the Create/Update metadata button on the metadata menu



5. Click the Export metadata button on the metadata menu
6. Browse to a directory and export metadata in the FGDC CSDGM (TXT) format

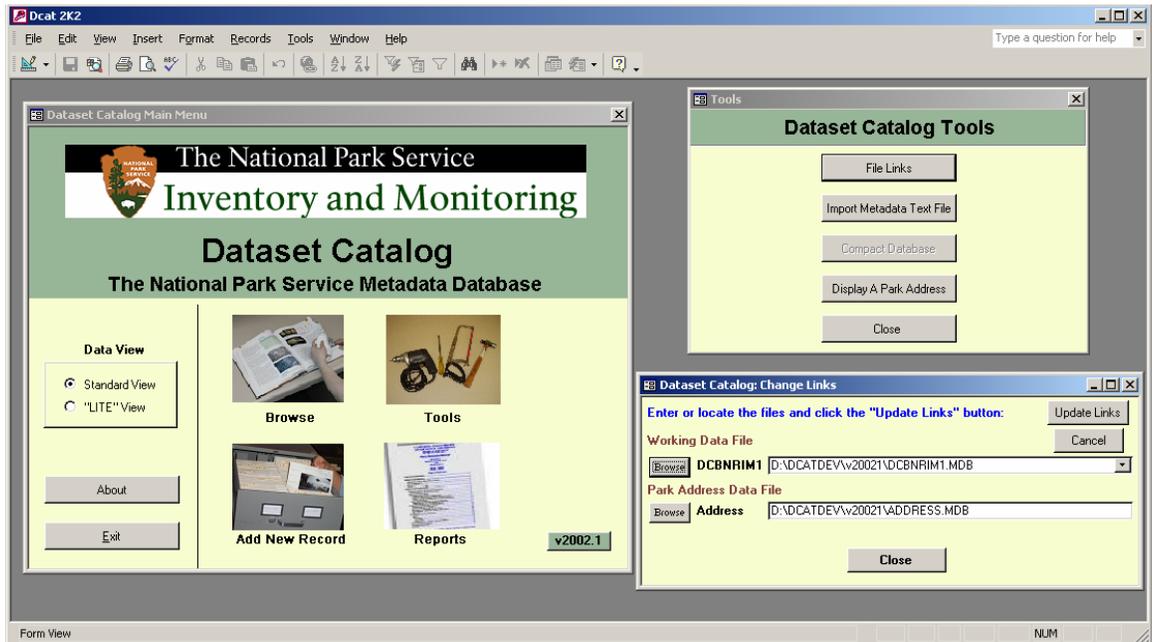


7. Click OK

2 - Entity and Attribute Information

Software: NPS Dataset Catalog (version 2002.1) – Data Dictionary Harvester
Website: <http://www.nature.nps.gov/im/apps/datacat/>

1. Download NPS Dataset Catalog from the website above. If you already have the current version installed, skip to Step 7
2. Open Dcat2k2.mdb



3. Click the Tools button on the Main Menu
4. Click the File Links button on the Tools Menu
5. Browse to the new locations for the two databases. They will be in the same directory as Dcat2k2.mdb
6. Click Update Links and the database links will be updated and you will be returned to the Dataset Catalog Main Menu
7. Click the Add New Record button

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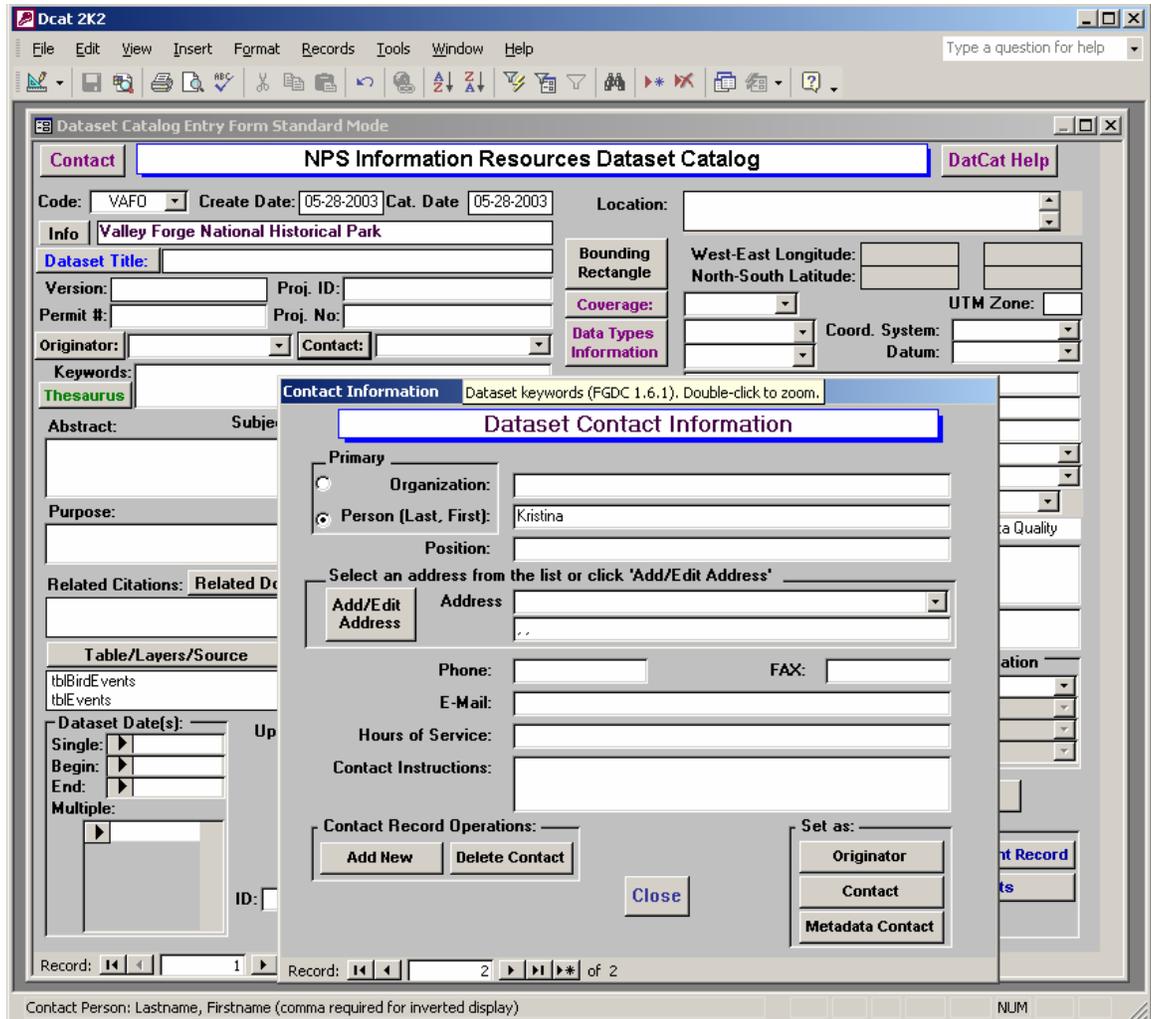
8. Select a park from the combo box next to Code at the top left hand corner of the form. This step is required so just pick a random park if needed.
9. Click the Table/Layers/Source button
10. Select Attribute from the combo box next to Source or Attribute?

The screenshot shows the 'Dcat 2K2' application window. The main form is titled 'Dataset Catalog Entry Form Standard Mode' and contains the following elements:

- Contact:** NPS Information Resources Dataset Catalog
- Code:** VAFO (selected from a dropdown)
- Create Date:** 05-28-2003
- Cat. Date:** 05-28-2003
- Location:** (empty field)
- Info:** Valley Forge National Historical Park
- Dataset Title:** (empty field)
- Version:** (empty field)
- Permit #:** (empty field)
- Originator:** (empty field)
- Keywords:** (empty field)
- Thesaurus:** (empty field)
- Abstract:** (empty field)
- Purpose:** (empty field)
- Related Citation:** Record: 1 of 1 (Filtered)
- Comments:** (empty field)
- Table/Layers/Source:** (empty field)
- Type:** (empty field)
- Scale:** (empty field)
- Metadata Information:** Metadata Contact: (empty field), Status: (empty field), Standard: (empty field), Version: (empty field), Priority: (empty field)
- Data Protection Information:** Sensitive?: No, Sens. Type: (empty field), Classification: N/A, Restrictions: (empty field)
- Record Operations:** Create New Record, Copy Current Record, Delete Current Record, Export FGDC File, Import FGDC .txt File, Reports, Save Record, Find Duplicates

The 'Source and Attribute Information' dialog box is open, showing 'DATA SET SOURCE AND ATTRIBUTE INFORMATION' with 'Attribute' selected for 'Source or Attribute?'. It also includes fields for 'Source/Table/Layer', 'Source Contribution', and 'Scale Denominator'. Buttons for 'View/Enter', 'Delete', 'Import', and 'Close' are visible.

11. Click Import from the Data Dictionary dialog box and navigate to the Microsoft Access database and click Open
12. Close the Source and Attribute Information dialog box
13. Click Contact and type in a name so that you can select it from the combo box. Again, this step is required so just pick type in a random name.



14. Close the Contact Information dialog box and select the name from the combo box next to Contact
15. Select the same name from the combo box next to Metadata Contact
16. Click Export FGDC File from the Record Operations list on the bottom of the form
17. You will be prompted that you are saving the document as a text file. Click Yes. The metatext.txt file will open in WordPad.
18. Navigate to the Entity_and_Attribute_Information section and copy the entire section by highlighting everything between Entity_and_Attribute_Information and Distribution_Information. Do not include the Distribution_Information heading.
19. Close Microsoft Access.

3 - Merge the Entity and Attribute Information with Spatial Data Organization Information and Spatial Reference Information

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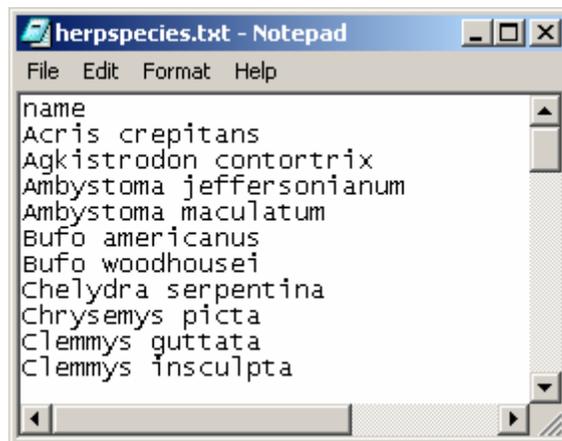
Software: Notepad

20. Open the metadata record exported from ArcCatalog in Notepad. Do not use WordPad, because it will mess up the formatting.
21. Paste the Entity_and_Attribute_Information section from WordPad over the Entity_and_Attribute_Information section in Notepad.
22. Save the metadata record in Notepad.
23. Close and discard the metadata record in WordPad.

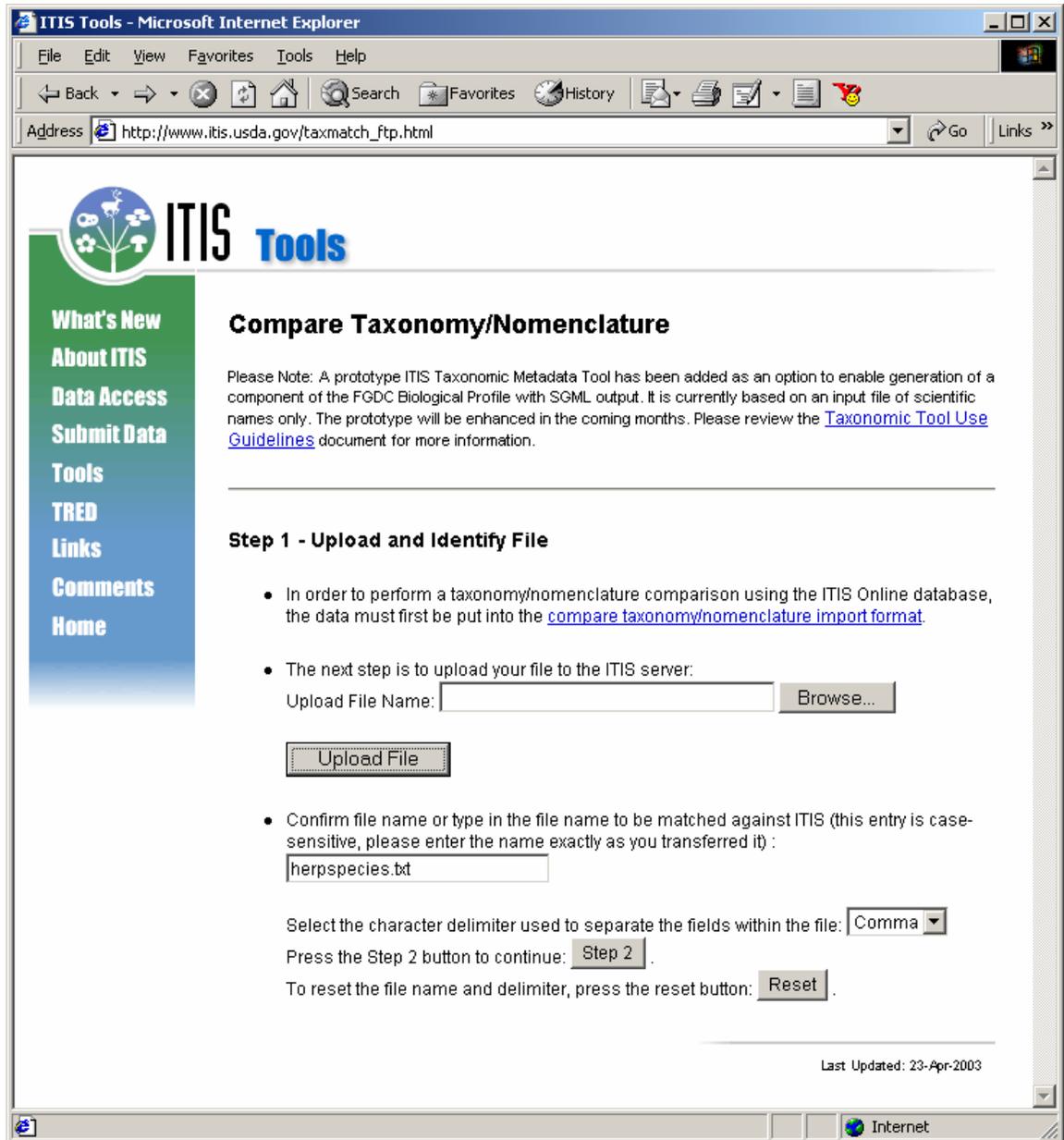
4 - Taxonomy Information

Online Tool: ITIS - Compare Taxonomy/Nomenclature
Website - http://www.itis.usda.gov/taxmatch_ftp.html

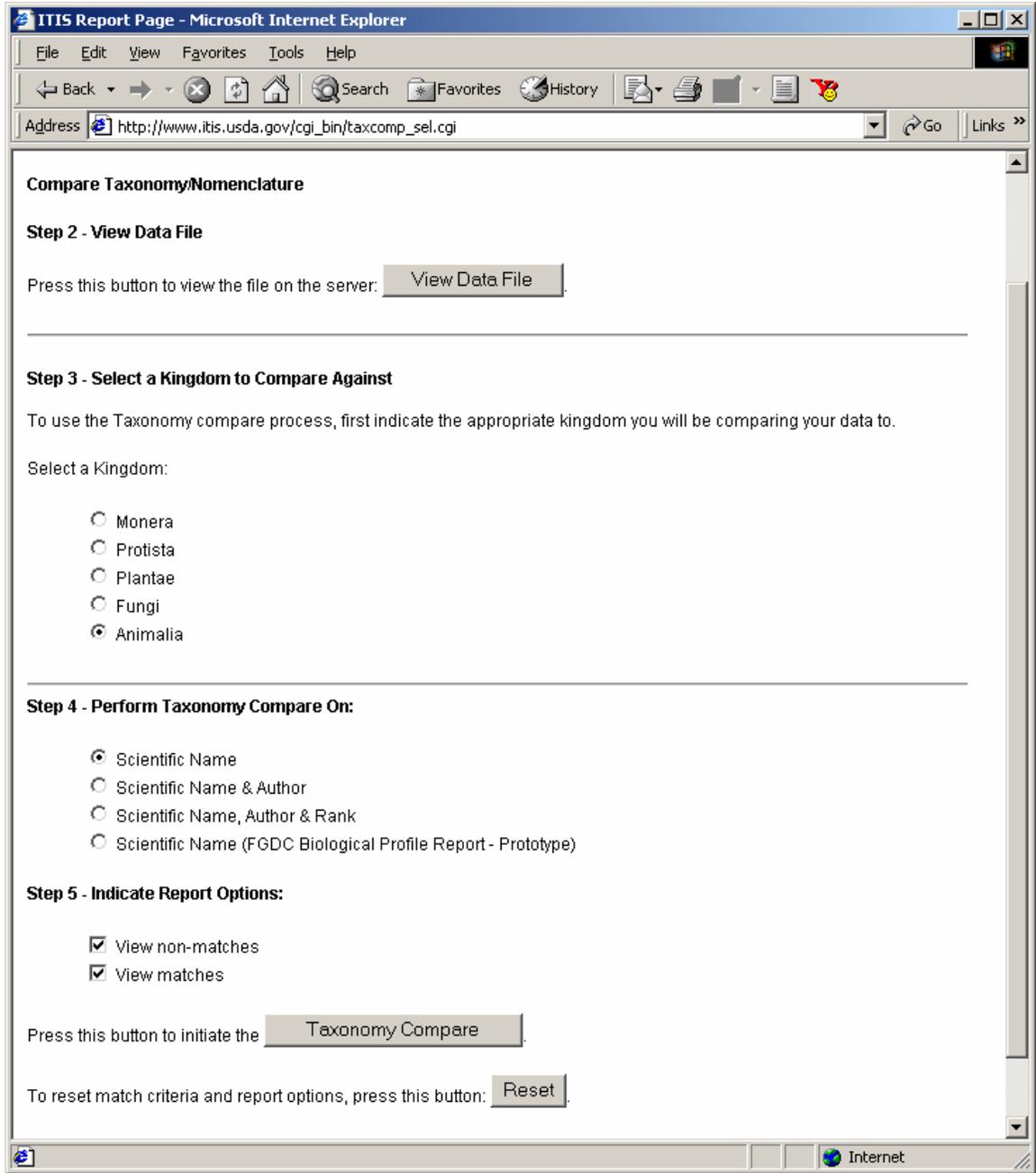
24. Create a list of scientific names for all species using Notepad. You can try to use subspecies but mine did not match up. I manually added them later using Notepad.



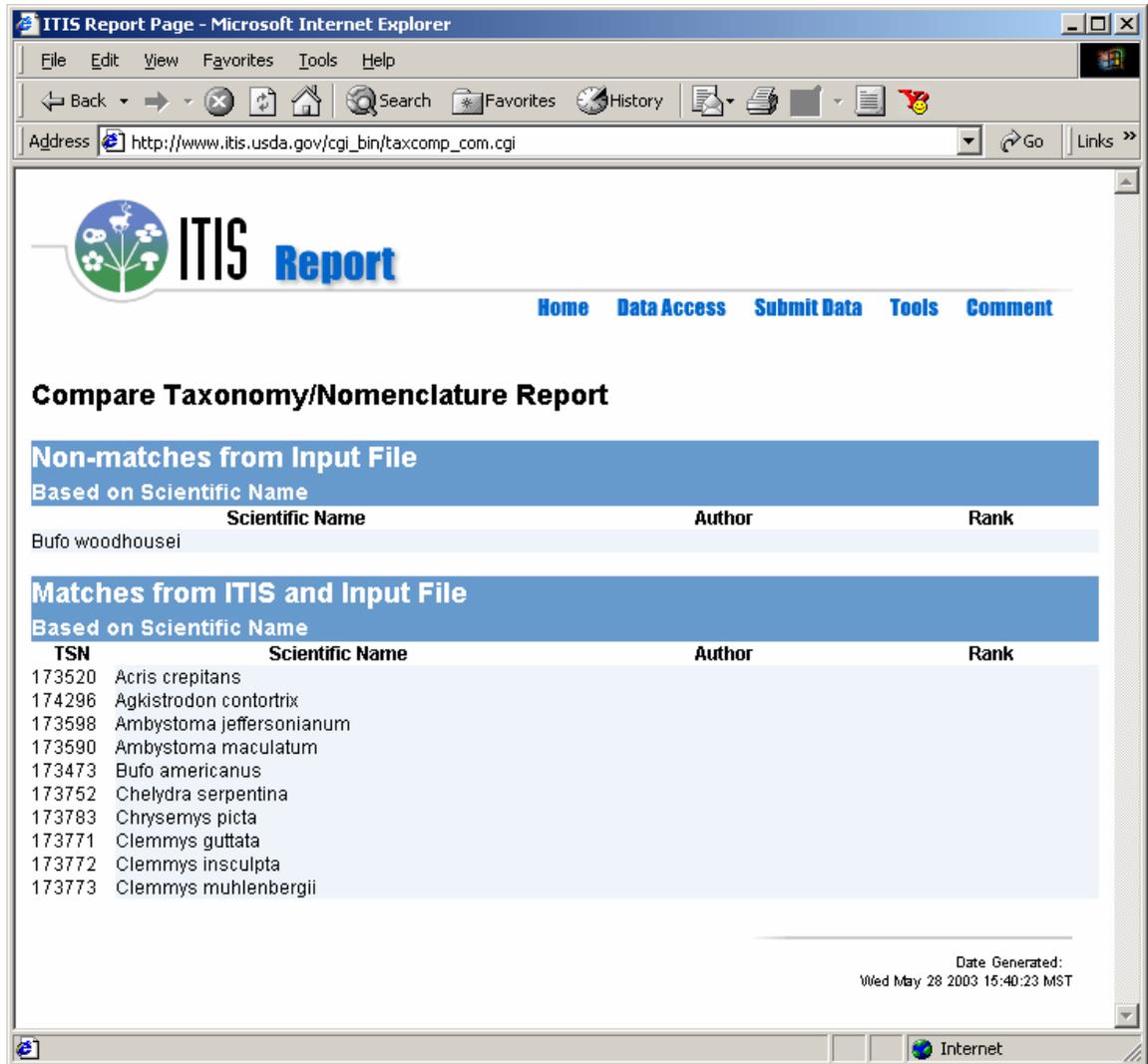
25. Go to http://www.itis.usda.gov/taxmatch_ftp.html



26. Click the Browse button to locate the text file.
27. Click Upload File to upload the text file.
28. Click Step 2 to move to the next step.
29. In Step 3 select the appropriate Kingdom
30. In Step 4 select Scientific Name
31. In Step 5 select both Report Options



32. Click Taxonomy Compare

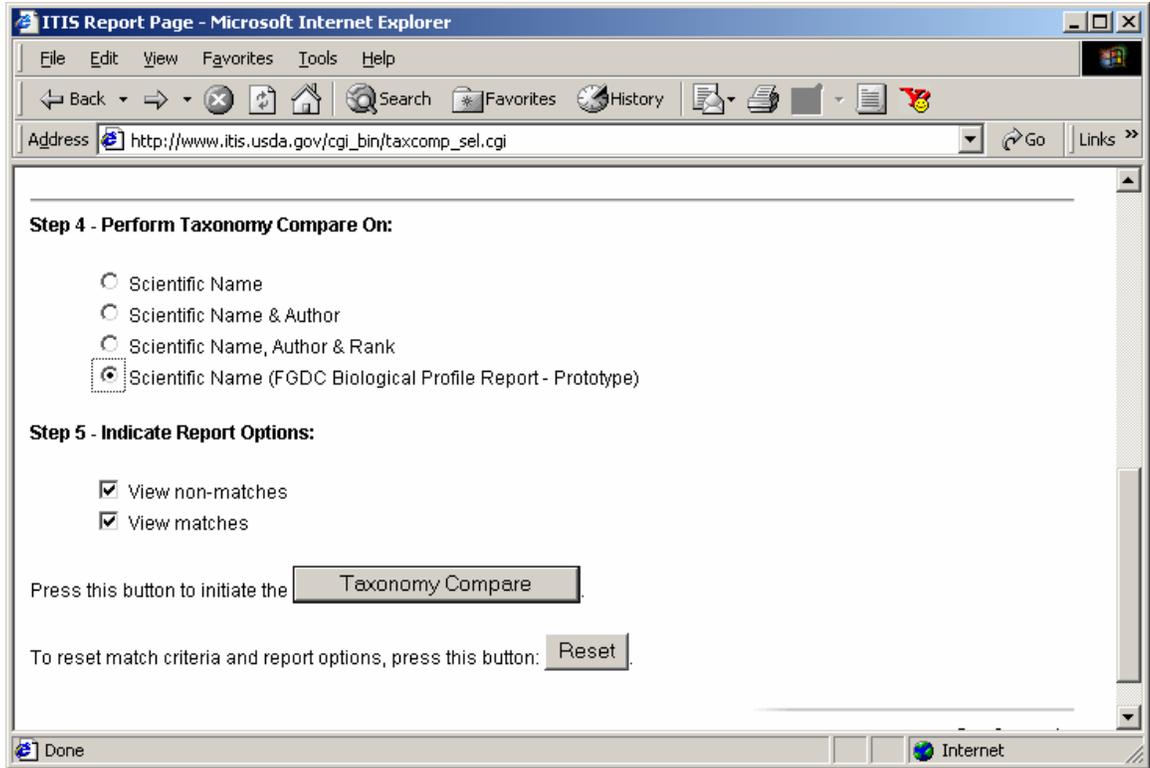


33. You will get a similar report. You will need to make the call on how you edit your file. In this example, *Bufo woodhousei* does not match IT IS. I deleted it from my list and added it back in manually using Notepad. Make sure all the scientific names are in the Matches list before proceeding.

If you make any changes to you text file you will need to upload it again.

34. Click your back browser button and revisit Step 4.

35. This time Select Scientific Name (FGDC Biological Profile Report – Prototype)



36. Click Taxonomy Compare

ITIS Report

Home Data Access Submit Data Tools Comment

FGDC Biological Profile Report

Matches Between ITIS and Input Data - Valid/Accepted Names

TSN	Scientific Name	Author	Credibility Rating
173520	Acris crepitans		Reviewed
174296	Agkistrodon contortrix		Reviewed
173598	Ambystoma jeffersonianum		Reviewed
173590	Ambystoma maculatum		Reviewed
173473	Bufo americanus		Reviewed
173752	Chelydra serpentina		Reviewed
173783	Chrysemys picta		Reviewed
173771	Clemmys guttata		Reviewed
173772	Clemmys insculpta		Reviewed
173773	Clemmys muhlenbergii		Reviewed

Matches Between ITIS and Input Data - Invalid/Not Accepted Names

Valid/Accepted Name Will Replace Invalid/Not Accepted in SGML Output

TSN	Scientific Name	Author	Credibility Rating	Accepted Scientific Name
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Non-matches from Input Data

Scientific Name

Duplicates Existing in Input Data

Scientific Name

Duplicates Existing in ITIS

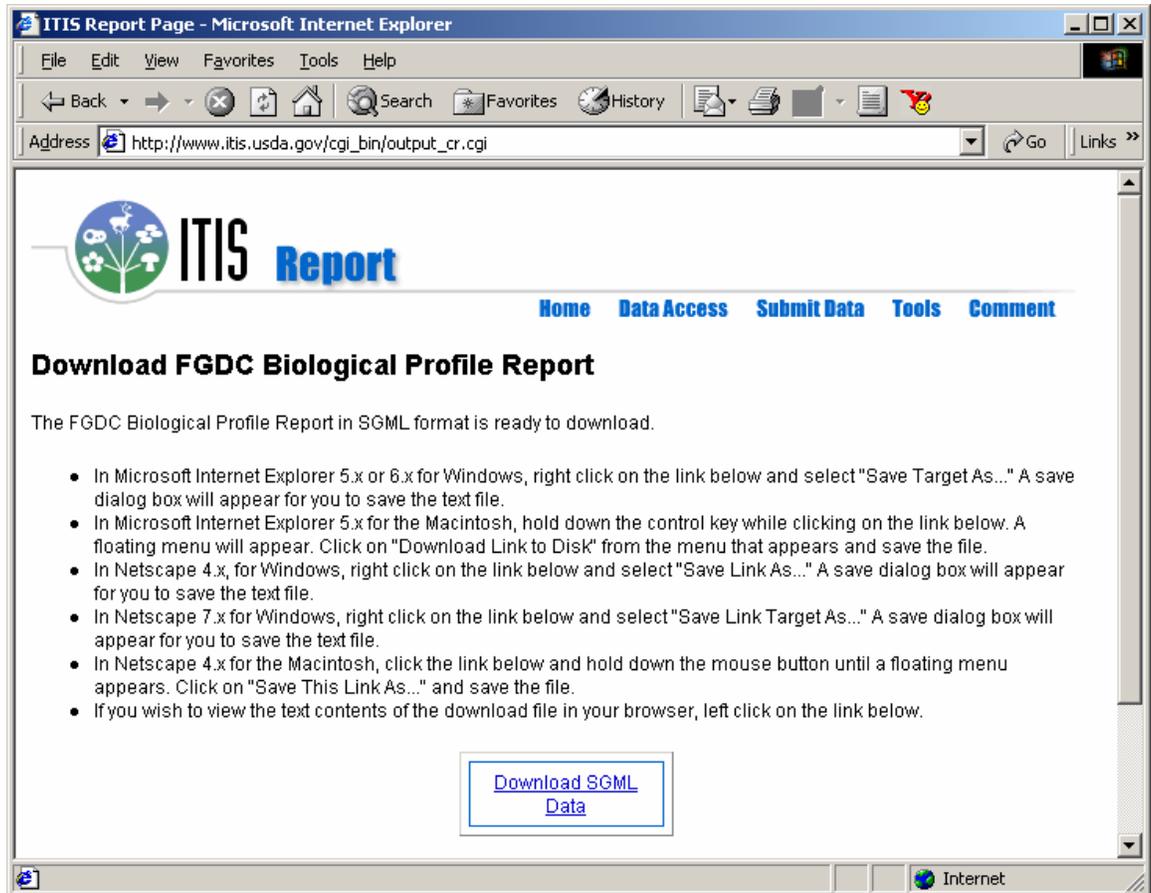
TSN	Scientific Name	Author	Credibility Rating	Use*	TSN Recommended (or explanation of error)
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* Because there are duplicate items existing in ITIS, only those items in the Use column that are checked will be included in the generated SGML.

Generate FGDC Biological Profile SGML

Done, but with errors on page. Internet

37. Click Generate FGDC Biological Profile SGML

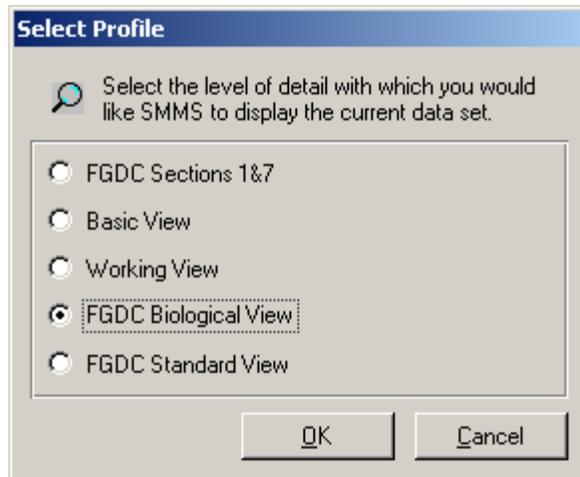


38. Click Download SGML Data.
39. Save it to your directory and open it in Notepad.
40. Close your browser

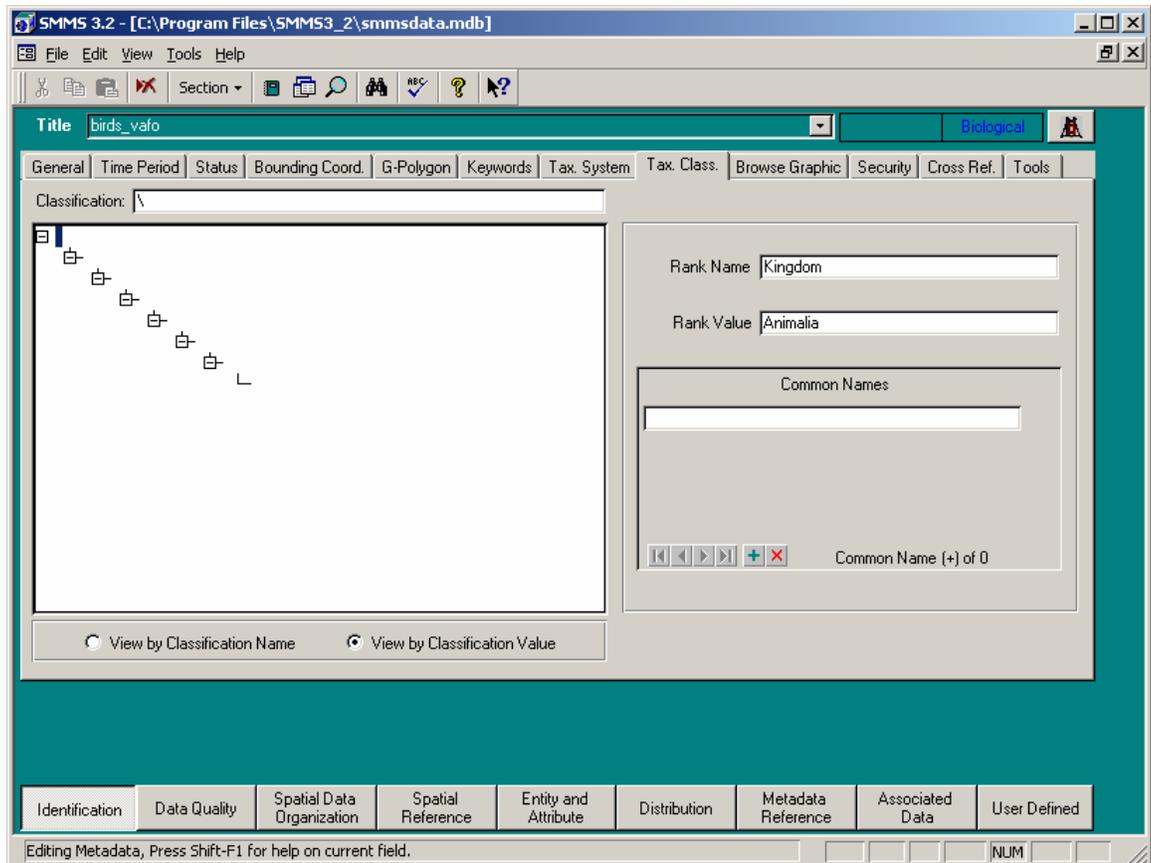
5 - Convert Text Metadata Record To SGML

Software: Intergraph SMMS 3.2
Website: <http://imgs.intergraph.com/smms/>

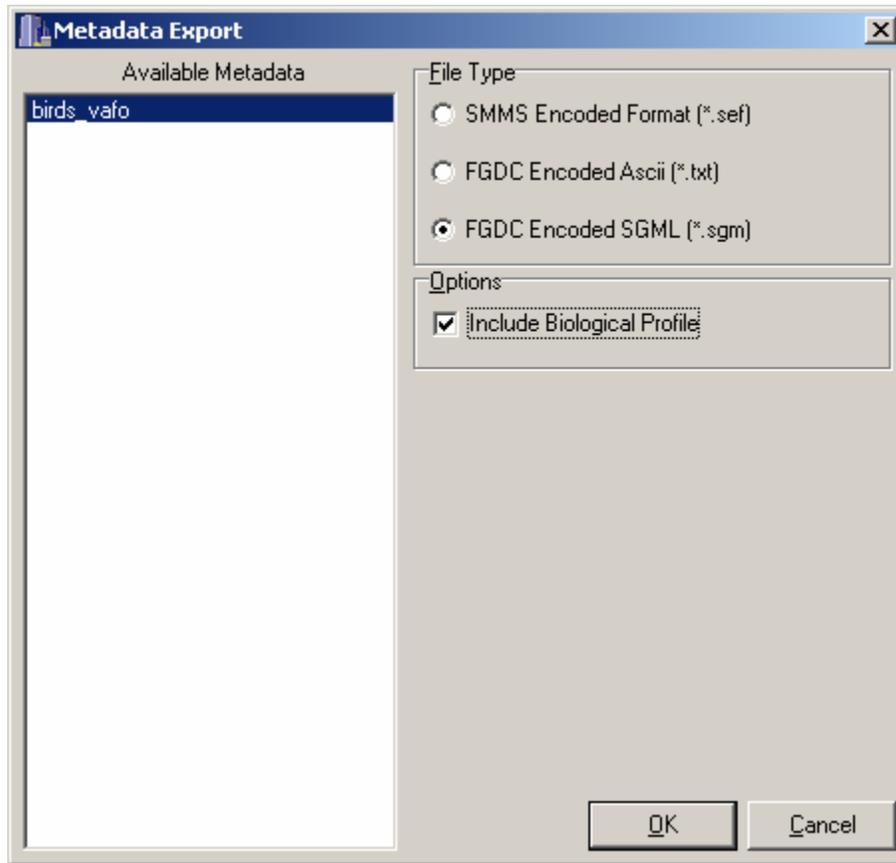
41. Select View|Profile... and make sure the FGDC Biological View is selected



42. Click OK
43. Select File|Import
44. Open the metadata record (txt)
45. Select the Tax. Class. tab and fill in the Kingdom Rank Value



46. Select File|Export and export the record. Make sure the File Type is FGDC Encoded SGML and that the Option to include the Biological Profile is checked.



6 - Merge SGML Metadata Record and Taxonomy Information

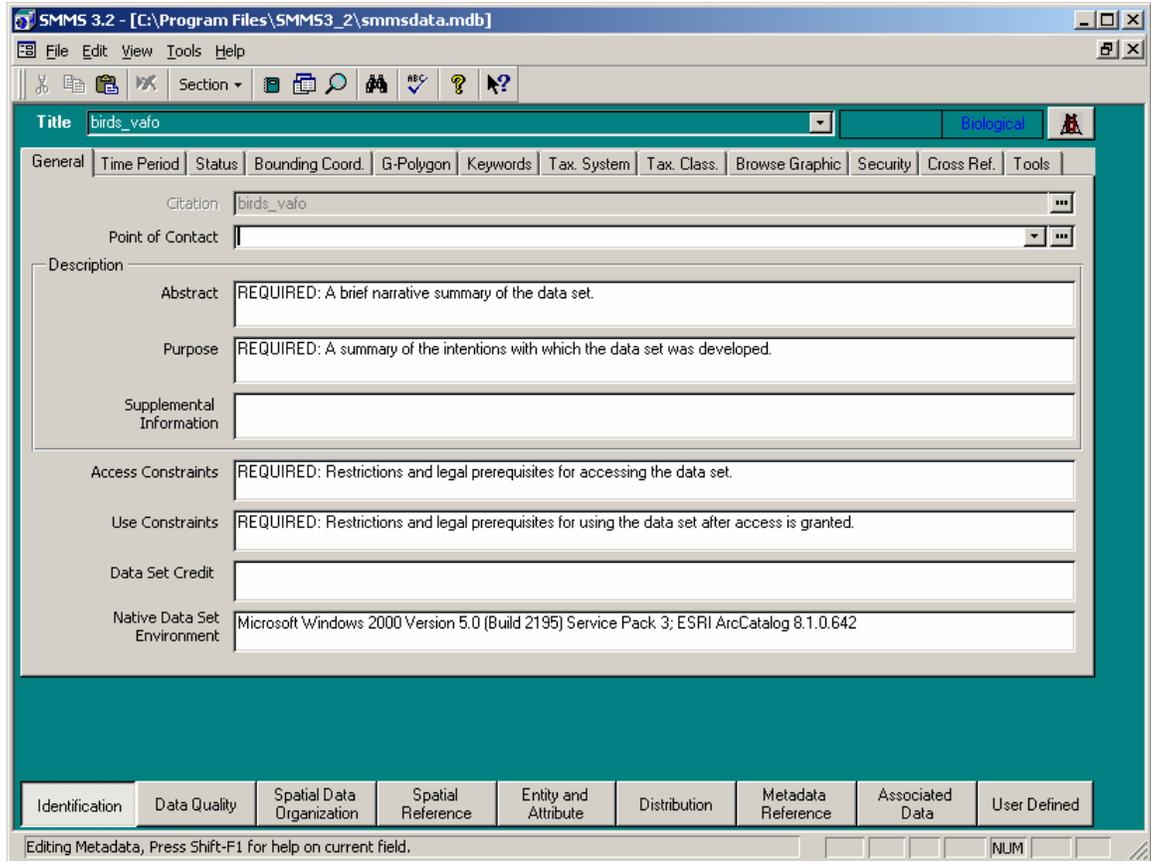
Software: Notepad

47. Open both the SGML metadata record and the SGML taxonomy information in Notepad.
48. Copy the SGML taxonomy information into the SGML metadata record and save it. You will want to copy it over everything between (but not including) <taxonomy> and </taxonomy>

7 - Edit SGML Metadata Record

Software: Intergraph SMMS 3.2

49. Delete previous metadata record from SMMS by selecting File|Delete...
50. Click Yes to All when prompted and close windows
51. Import merged SGML Metadata Record using File|Import. You might need to change the Files of Type option to view .sgm files.



52. Fill-in all the required and applicable metadata elements using SMMS and the Biological Data Profile Workbook (March 2001) which can be found at

<http://www.nbi.gov/datainfo/metadata/standards/BDP-workbook.doc>

53. When you are done, export the metadata as a text file using File|Export. The File Type should be FGDC Encoded Ascii (*.txt) and the box to include the Biological Profile should be checked.

8 - Parsing the Final Metadata

Software: MP 2.8.2 with the Biological Data Profile (BDP)

Website: http://www.fort.usgs.gov/products/data/metadata/mp_bdp.asp

54. You need five files to run MP with the Biological Data Profile (BDP). Go to http://www.fort.usgs.gov/products/data/metadata/mp_bdp.asp for instructions on downloading and saving the files. You should end up with mp.exe and cns.exe in c:\usgs\tools\bin if you download the complete package and install it to the default directory. You will want to store cns_bdp.bat, mp_bdp.bat, and bdp.cfg in the same directory.

55. Copy your final text metadata record into c:\usgs\tools\bin

56. Open the Command Prompt window (MS-DOS) and change directories until you are at c:\usgs\tools\bin. Type: cd \usgs\tools\bin
57. Rename the metadata record to change the suffix from .txt to .co. Type:
rename birds_vafo.txt birds_vafo.co
58. To run mp with BDP on the birds_vafo.co record type: mp_bdp.bat birds_vafo
59. You will need to fix all the errors using either Notepad or SMMS.
60. When you are able to run your metadata through mp with No Errors, your metadata is ready to be distributed and posted on a clearinghouse.

9 - UPDATE: Using mp After Exporting Metadata with Biological Data Profile Elements from SMMS 5.1

1. Make sure you have the latest version of mp. As of May 20, 2004, the latest version is mp 2.8.12. The current version is listed and can be downloaded at
<http://geology.usgs.gov/tools/metadata/>

You can check your version by opening the (DOS) Command Prompt window, navigating to the directory where you have your working version of mp, and typing C:\mp.

If you just type mp at the default command prompt, you will get the default mp which is the one that came with ArcGIS. I run ArcGIS 8.3 (Build 300) which comes with mp 2.7.33 – an older version of mp.
2. After editing your metadata in SMMS 5.1, export the metadata record (File|Export) as File Type 'FGDC Encoded XML' and check Options to 'Include Biological Profile.' Save it on your hard drive.
3. Open the file and notice that there are extra elements prefixed with "sm." These are SMMS-specific elements and have something to do with the database linkages within SMMS. These elements are new to SMMS 5.1 and do not exist in lower version of SMMS. If you try to parse this data record with the regular mp or the mp_bdp, you will get an error message for each sm tag.
4. In order to strip your metadata record of these elements, Peter Schweitzer (USGS) and Bruce Westcott (SMMS) created an extension file (smms.ext) which is included in the latest version of mp (2.8.12). The configuration file is smms-complete.cfg and both the configuration and extension files are located in the mp/tools/ext directory.

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Check smms-complete.cfg for the location of smms.ext. The location is hard-coded as d:\usgs\tools\ext\smms.ext so it may need to be changed.

5. Parse the metadata record by using:

```
mp -c ..\ext\smms-complete.cfg xxx.xml
```

where xxx is the name of the file.

Questions or comments?

Please Contact:

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